

In the Claims

The following is a listing of the claims of the above-referenced application.

1. (Original) An atomizer system comprising:
 - a) a melt material to be atomized;
 - b.) a containment portion for securing the melt material;
 - c.) a unit which accelerates the environment of the melt material such that the gravitational forces experienced by the melt material are elevated relative to Earth's standard gravitational force; and
 - d.) atomizing fluid that flows across an exposed surface of the melt material facilitating the establishment of liquid droplets that aerosolize and create fine particulates.
2. (Original) The atomizer system of claim 1 further comprises means to introduce relative motion between the containment portion and the melt material.
3. (Original) The atomizer system of claim 2 wherein elements of the atomizer system rotate on more than one axis.
4. (Original) The atomizer system of claim 3 wherein the containment portion spins as a liquid melt material is introduced into it.

5. (Original) The atomizer system of claim 3 wherein the melt material is exposed to an acceleration that has components both normal and perpendicular to a retaining surface of the containment portion.
6. (Original) The atomizer system of claim 1 wherein the unit accelerating the environment of the melt material is a centrifuge.
7. (Original) The atomizer system of claim 1 further comprising a source of vibration to introduce disturbances within the melt material.
8. (Original) The atomizer system of claim 1 wherein the flow of atomization fluid is non-continuous.
9. (Original) The atomizer system of claim 1 wherein the containment portion is made of a solid form of the melt material itself.
10. (Original) The atomizer system of claim 1 is capable of processing entrained (non-dissolved) fluid within the melt material to facilitate atomization for at least a portion of the overall atomization process.
11. (Original) The atomizer system of claim 1 wherein the atomizing fluid is a gas.

12. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is inert.
13. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is oxidizing.
14. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is reducing.
15. (Original) The atomizer system of claim 1 wherein the atomizing fluid is a liquid.
16. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is inert.
17. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is oxidizing.
18. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is reducing.
19. (Original) The atomizer system of claim 1 wherein the atomizing fluid contains particulates therein.

20. (Original) The atomizer system of claim 1 wherein the thermodynamic conditions, i.e. temperature, pressure, and density, as well as velocity (axial and angular) of the atomizing fluid are user selectable.
21. (Original) The atomizer system of claim 1 further comprising a cooling system.
22. (Original) The atomizer system of claim 1 further comprising a liquefying system that subjects the material to be melted to elevated acceleration prior to liquefying.
23. (Original) The atomizer system of claim 22 wherein the operation of the liquefying system is non-continuous.
24. (Original) The atomizer system of claim 22 wherein the liquefying system applies radiant heating to the melt material to be atomized.
25. (Original) The atomizer system of claim 22 wherein the liquefying system applies induction heating to the melt material to be atomized.
26. (Original) The atomizer system of claim 22 wherein the liquefying system applies electric arc heating to the melt material to be atomized.
27. (Original) The atomizer system of claim 22 wherein the liquefying system applies lasers to the melt material to be atomized.

28. (Original) The atomizer system of claim 22 wherein the liquefying system applies hot atomizing fluid heating to the melt material to be atomized.
29. (Original) The atomizer system of claim 22 wherein the liquefying system applies chemical reaction heating to the melt material to be atomized.
30. (Original) The atomizer system of claim 22 wherein the liquefying system applies refractory containment heating to the melt material to be atomized.
31. (Original) The atomizer system of claim 22 wherein the liquefying system applies plasma arc heating to the melt material to be atomized.
32. (Original) A method of atomizing a material comprising the steps of:
- a.) accelerating the environment of the material to be atomized such that the gravitational forces experienced by the material are elevated relative to Earth's standard gravitational force; and
 - b.) flowing an atomizing fluid across an exposed surface of the material facilitating the establishment of liquid droplets which aerosolize and create fine particulates.
33. (Original) The atomizer method of claim 32 further comprises the step of introducing relative motion between the containment portion and the melt material.

34. (Original) The atomizer method of claim 33 further comprises the step of rotating the atomizer system on more than one axis.
35. (Original) The atomizer method of claim 33 further comprises the step of spinning the containment portion while introducing the liquid melt material into it.
36. (Original) The atomizer method of claim 33 further comprises the step of exposing the melt material to an acceleration that has both normal and perpendicular components to the retaining surface of the melt containment portion.
37. (Original) The atomizer method of claim 32 further comprises the step of accelerating the environment of the melt material in a centrifuge.
38. (Original) The atomizer method of claim 32 further comprises the step of introducing a source of vibration to facilitate disturbances within the melt material.
39. (Original) The atomizer method of claim 32 further comprises the step of controlling a non-continuous flow of atomization fluid.
40. (Original) The atomizer method of claim 32 further comprises the step of containing the melt material with a containment portion made of a solid form of the melt material itself.

41. (Original) The atomizer method of claim 32 further comprises the step of processing entrained (non-dissolved) fluid within the melt material to facilitate atomization for at least a portion of the overall atomization process.
42. (Original) The atomizer method of claim 32 wherein the atomizing fluid is a gas.
43. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is inert.
44. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is oxidizing.
45. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is reducing.
46. (Original) The atomizer method of claim 32 wherein the atomizing fluid is a liquid.
47. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is inert.
48. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is oxidizing.

49. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is reducing.

50. (Original) The atomizer method of claim 32 wherein the atomizing fluid contains particulates therein.

51. (Original) The atomizer method of claim 32 further comprises the step of the user selecting the thermodynamic conditions, i.e. temperature, pressure, and density, as well as velocity (axial and angular) of the atomizing fluid.

52. (Original) The atomizer method of claim 32 further comprises the step of cooling at least one component of the atomizer.

53. (Original) The atomizing method of claim 32 further comprising the step of subjecting the material to be liquefied to the intended acceleration prior to being liquefied.

54. (Original) The atomizing method of claim 53 wherein the step of liquefying the melt material is non-continuous.

55. (Original) The atomizing method of claim 53 wherein the liquefying step applies radiant heating to the melt material to be atomized.

56. (Original) The atomizing method of claim 53 wherein the liquefying step applies induction heating to the melt material to be atomized.
57. (Original) The atomizing method of claim 53 wherein the liquefying step applies electric arc heating to the melt material to be atomized.
58. (Original) The atomizing method of claim 53 wherein the liquefying step applies lasers to the melt material to be atomized.
59. (Original) The atomizing method of claim 53 wherein the liquefying step applies hot atomizing fluid heating to the melt material to be atomized.
60. (Original) The atomizing method of claim 53 wherein the liquefying step applies chemical reaction heating to the melt material to be atomized.
61. (Original) The atomizing method of claim 53 wherein the liquefying step applies refractory containment heating to the melt material to be atomized.
62. (Original) The atomizing method of claim 53 wherein the liquefying step applies plasma arc heating to the melt material to be atomized.